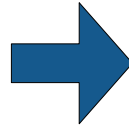


The Big Question

How do computers work?

```
/**
 * Simple HelloButton() method.
 * @version 1.0
 * @author john doe <doe.j@example.com>
 */
HelloButton()
{
    JButton hello = new JButton( "Hello, wor
    hello.addActionListener( new HelloBtnList

    // use the JFrame type until support for t
    // new component is finished
    JFrame frame = new JFrame( "Hello Button"
    Container pane = frame.getContentPane();
    pane.add( hello );
    frame.pack();
    frame.show();           // display the fra
}
```



Project 0: Unix Warmup

```
Terminal — /home/sbarker — ssh sbarker.bowdoin.edu — 80x34
sbarker@sbarker$ ssh dover
sbarker@dover's password:
Last login: Tue Jan 26 06:18:46 2016 from sbarker.bowdoin.edu

+-----+
|                               |
|           Welcome to Bowdoin College           |
|-----|
| For information about our Linux environment, please visit |
|                               |
|                               |
|-----|
| http://hpc.bowdoin.edu/ |
|                               |
+-----+

*****
Please be mindful that this machine is a shared resource. If you need
to run very intensive computational programs, please consider running
them on the HPC Grid instead. For more info, please peek at:
http://hpc.bowdoin.edu/

Thank you!

sbarker@dover$ █
```

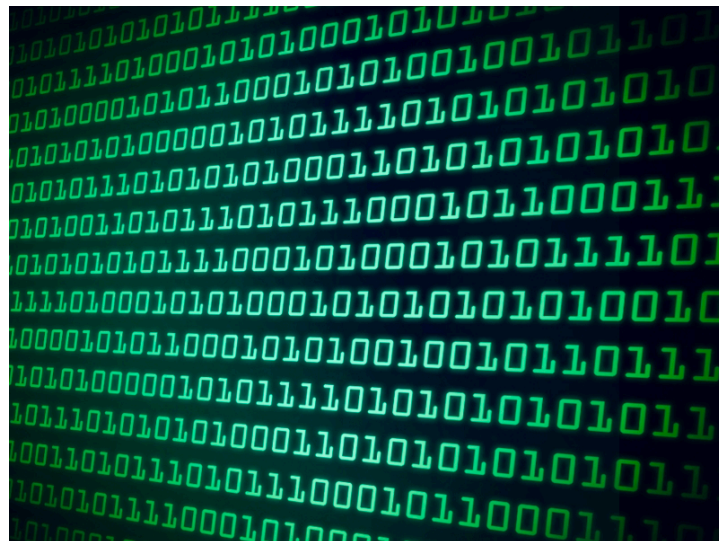
System Layers

```
#include <stdio.h>

main()

{
    printf("hello, world\n");
}
```

Data Representation



Typical Data Sizes

Data Type	Bytes
char	1
short	2
int	4
long	8
float	4
double	8

Encoding Bytes

Hex	Decimal	Binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
A	10	1010
B	11	1011
C	12	1100
D	13	1101
E	14	1110
F	15	1111